

---

# Optimization of acetylcholinesterase immobilization monitored with a rapid and specific colorimetric technique

Paul Bresson\* , Yue Ma , Diane Julien-David , and Eric Marchioni<sup>1</sup>

<sup>1</sup>Equipe de Chimie Analytique des Molécules BioActives, Université de Strasbourg, CNRS, IPHC UMR 7178 (Institut Pluridisciplinaire Hubert Curien) – CNRS : UMR7178 – 74 route du Rhin, 67400 Illkirch-Graffenstaden, France

## Résumé

The goal of this work was to optimize the conditions for acetylcholinesterase immobilization on different stationary phases and to monitor the immobilization reaction using a rapid technique. This procedure will enable the construction of an immobilized enzyme reactor for use in enzyme inhibitor screening. For this study, amino silica (NUCLEODUR 100 - 5 $\mu$ m NH<sub>2</sub>) and a monolithic disk (CIM, 7.9mm x 2.1mm, aldehyde-coated) were used. The enzyme immobilization was carried out *in batch* and the reaction was monitored by evaluating the activity of the residual acetylcholinesterase in solution using Ellman's assay. The influence of the enzyme-to-stationary phase ratio was tested. It was shown that the grafting reaction occurred rapidly on both types of media. It was also demonstrated that a greater amount of acetylcholinesterase could be immobilized on the CIM disk before saturation

**Mots-Clés:** Acetylcholinesterase, Immobilization, immobilized enzyme reactor, inhibitor screening

---

\*Intervenant